



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	New Hampshire Estates Elementary School
Date of Test Report	2/17/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	54
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.8 pCi/L

Project Status:

1. 5-Year retesting completed.



February 17, 2023

Mr. Brian Croyle  
Environmental Specialist  
Montgomery County Public Schools  
Gaithersburg, MD 20879

Re: **Radon Testing Services**  
KCI Job # 122210551

Location: New Hampshire Estates Elementary School  
8720 Carroll Avenue  
Silver Spring, MD 20903

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the New Hampshire Estates Elementary School, located at 8720 Carroll Ave. Silver Spring, MD 20903 (subject site).

**Scope of Services:**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on January 23, 2023 and deployed sixty-one (61) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI also included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on January 26, 2023 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs - MA. for analysis by gamma-ray spectroscopy.

Accustar Labs - MA is a NRSB certified analytical laboratory for radon analysis (certification #ARL0017) located at 2 Saber Way, Ward Hill, MA 01835.

**Evaluation of Testing Conditions:**

These tests represent:

- Follow up to initial testing.

These tests were conducted to:

- Evaluate radon concentration levels at the facility.

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility’s HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate temperatures ranged from the 31°F to 52°F. Maximum sustained winds ranged from 5-25 miles per hour. Average humidity was around 60% with .32 inches of precipitation (rain) was recorded during testing period.

**Results:**

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
≥4.0 pCi/L	None	N/A
<4.0 pCi/L	See Attachment B	

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf  
Radon Measurement Provider  
#111004 RT  
KCI Technologies, Inc.

Attachments:     A- Floor Plan with Test Locations  
                      B- Table 1-3, Radon Test Summary Spreadsheets  
                      C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
New Hampshire Estates ES		
Test Period: 01/23/2023 - 01/26/2023		
Kit Number	Room / Area	Result
11633742	105	1.2
11633726	107	1.2
11633727	109	1.5
11633723	110	1.5
11633736	116	1.4
11633731	117	< 0.3
11633735	117	0.8
11633733	118	1.3
11633734	118	1
11633730	119	1.3
11633729	120	2.3
11633728	121	2.5
11633732	209	< 0.3
11633740	215	< 0.3
11633746	216	< 0.3
11633744	217	< 0.3
11633745	218	0.6
11633738	219	< 0.3
11633741	219	< 0.3
11633739	220	< 0.3
11633737	221	2.8
11633725	224	0.6
11633721	225	0.7
11633891	228	< 0.3
11633705	229	< 0.3
11633895	230	< 0.3
11633706	231	< 0.3
11633704	241	< 0.3
11633754	241	< 0.3
11633751	304	< 0.3
11633752	312	0.6
11633897	100A	0.6
11633896	100C	0.6
11633892	100D	< 0.3
11633724	101/4	1.3
11633703	AP	< 0.3
11633753	AP	< 0.3
11633888	APR	< 0.3
11633898	APR	< 0.3
11633899	BUILDING SERVICES	0.5
11633900	BUILDING SERVICES	< 0.3
11633701	GYM	< 0.3



Table 1- Radon Testing Results		
New Hampshire Estates ES		
Test Period: 01/23/2023 - 01/26/2023		
Kit Number	Room / Area	Result
11633702	GYM	< 0.3
11633743	GYM OFFICE	< 0.3
11633713	H-11	< 0.3
11633718	H-11	< 0.3
11633714	H-14	< 0.3
11633715	H-15	< 0.3
11633719	H-16	< 0.3
11633720	H-17	< 0.3
11633710	H-2	0.9
11633707	H-7	0.6
11633708	H-8	< 0.3
11633717	H-9	< 0.3
11633711	HEALTH	0.8
11633712	LINKAGES	< 0.3
11633889	MAIN OFFICE	0.6
11633716	MEDIA	< 0.3
11633722	MEDIA OFFICE	< 0.3
11633893	MEDIA OFFICE	< 0.3
11633709	STAFF LOUNGE	< 0.3

Table 2- Radon Testing Results			
New Hampshire Estates ES			
Test Period: 01/23/23 - 01/26/23			
Kit Number	QC Type	Room / Area	Result
11633731	FB	117	< 0.3
11633733	D	118	1.3
11633738	D	219	< 0.3
11633754	D	241	< 0.3
11633753	FB	AP	< 0.3
11633900	D	Building Services	< 0.3
11633718	FB	H-11	< 0.3
11633990	OB	OFFICE BLANK	< 0.3
11633992	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
New Hampshire Estates ES		
Test Period: 01/23/23 - 01/26/23		
Kit Number	Room/Area	Result
	N/A	

Summary of Missing, Compromised and >= 4 piC/L Tests		
New Hampshire Estates ES		
Test Period: 01/23/23 - 01/26/23		
Kit Number	Room/Area	Result
	N/A	

Table Note:  
 \* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:

**NEW HAMPSHIRE ESTATES ES  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11633897	100A	2023-01-23 @ 12:00 pm	2023-01-26 @ 11:00 am	0.6 ± 0.3	2023-01-30
11633896	100C	2023-01-23 @ 12:00 pm	2023-01-26 @ 11:00 am	0.6 ± 0.3	2023-01-30
11633892	100D	2023-01-23 @ 12:00 pm	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633724	101/4	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.3 ± 0.4	2023-01-30
11633742	105	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	1.2 ± 0.4	2023-01-30
11633726	107	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.2 ± 0.4	2023-01-30
11633727	109	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.5 ± 0.4	2023-01-30
11633723	110	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.5 ± 0.4	2023-01-30
11633736	116	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.4 ± 0.4	2023-01-30
11633731	117	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633735	117	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	0.8 ± 0.3	2023-01-30
11633734	118	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.0 ± 0.4	2023-01-30
11633733	118	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.3 ± 0.4	2023-01-30
11633730	119	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	1.3 ± 0.4	2023-01-30
11633729	120	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	2.3 ± 0.4	2023-01-30
11633728	121	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	2.5 ± 0.4	2023-01-30
11633732	209	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633740	215	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633746	216	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633744	217	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633745	218	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	0.6 ± 0.3	2023-01-30
11633741	219	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633738	219	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633739	220	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633737	221	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	2.8 ± 0.4	2023-01-30
11633725	224	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	0.6 ± 0.3	2023-01-30
11633721	225	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	0.7 ± 0.3	2023-01-30
11633891	228	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633705	229	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633895	230	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633706	231	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633754	241	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633704	241	2023-01-23 @ 12:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633751	304	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633752	312	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	0.6 ± 0.4	2023-01-30
11633753	AP	2023-01-23 @ 2:00 pm	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633703	AP	2023-01-23 @ 12:00 pm	2023-01-26 @ 11:00 am	< 0.3	2023-01-30

Radon test result report for:

**NEW HAMPSHIRE ESTATES ES  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11633898	APR	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633888	APR	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633899	BUILDING SERVICES	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	0.5 ± 0.3	2023-01-30
11633900	BUILDING SERVICES	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633701	GYM	2023-01-23 @ 12:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633702	GYM	2023-01-23 @ 12:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633743	GYM OFFICE	2023-01-23 @ 2:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633718	H-11	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633713	H-11	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633714	H-14	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633715	H-15	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633719	H-16	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633720	H-17	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633710	H-2	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	0.9 ± 0.3	2023-01-30
11633707	H-7	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	0.6 ± 0.3	2023-01-30
11633708	H-8	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633717	H-9	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633711	HEALTH	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	0.8 ± 0.4	2023-01-30
11633712	LINKAGES	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633889	MAIN OFFICE	2023-01-23 @ 12:00 pm	2023-01-26 @ 11:00 am	0.6 ± 0.3	2023-01-30
11633716	MEDIA	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633722	MEDIA OFFICE	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633893	MEDIA OFFICE	2023-01-23 @ 1:00 pm	2023-01-26 @ 12:00 pm	< 0.3	2023-01-30
11633709	STAFF LOUNGE	2023-01-23 @ 12:00 pm	2023-01-26 @ 11:00 am	< 0.3	2023-01-30

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KC1 TECHNOLOGIES, INC Job Number 208343

NOMINAL Conditions: Radon Conc 34.7 pCi/L Rel. Hum 49.4 % Temp. 69.6 F

Date Start: 12/24/22 Date Stop: 12/27/22 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0810 Time Stop: 0810 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (5) CHAR BAGS - Device No.'s: \_\_\_\_\_

11285109, 11285110, 11285101

THRU 11285103

BY LEFT

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ R/h Elevation = 820 ft

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December 29, 2022

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**OFFICE**

**MAIN**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11285110	SK1	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	31.7 ± 2.5	2022-12-29
11285101	SK2	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.1 ± 2.4	2022-12-29
11285103	SK3	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	34.0 ± 2.7	2022-12-29
11285102	SK4	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.9 ± 2.5	2022-12-29
11285109	SK5	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	32.0 ± 2.6	2022-12-29

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Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498





## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Week 2 January Schools

Name of Schools:

1. Glen Haven ES
2. Kemp Mill ES
3. John F. Kennedy HS
4. Oakland Terrace ES
5. Odessa Shannon MS
6. JoAnn Leleck ES @ Broad Acres
7. New Hampshire Estates ES
8. Cannon Road ES
9. Galway ES
- 10.A. Mario Loiederman MS

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	Date	Initials
Radon Test Kits Deployed	01/23/2023	BMM
Radon Test Kits Collected	01/26/2023	BMM
Radon Test Kits Shipped to Lab*	01/26/2023	BMM
Radon Test Kits Received by Lab*	01/31/2023	BMM

\*All samples sent to Air Check, Inc., 2 Saber Way, Ward Hill, MA 01835



## MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

**Executive Summary:**  
**New Hampshire Estate Elementary School**  
8720 Carroll Avenue,  
Silver Spring, MD 20903

Date of Test Report:	2/5/2019
Round of Testing:	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing <b>HVAC Upgrade</b> Window Replacement New Addition New Facility
# of Rooms Tested:	60
# of Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	1.7

### Project Status

**Initial testing complete:** No further action at this time.



February 5, 2019

Mr. Richard Cox  
Indoor Air Quality Team Leader  
Montgomery County Public Schools  
850 Hungerford Drive  
Rockville, MD 20850

Re: Radon Testing Services

Location: New Hampshire Estate Elementary School  
8720 Carroll Avenue,  
Silver Spring, MD 20903

Dear Mr. Cox:

Intertek-PSI (PSI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) for completion of a "short-term" 3-day radon test for New Hampshire Estate Elementary School, located at 8720 Carroll Avenue, Silver Spring, MD 20903 (subject site).

**Scope of Services:**

PSI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. PSI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS007) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

PSI visited the site on November 27, 2018 and deployed seventy-three (73) activated charcoal (AC) radon test kits. PSI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. PSI returned to the site on November 30, 2018 to retrieve the radon sampling test kits. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, PSI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, PSI submitted ten (10) test kits to Bowser-Morner Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner Inc. prior to being returned to the laboratory for analysis.

PSI shipped all radon tests via overnight delivery to AccuStar Labs for analysis by gamma-ray spectroscopy. Accustar Labs is a NRSB certified analytical laboratory for radon analysis located at 929 Mount Zion Road, Lebanon, Pennsylvania (certification # ARL0007) and 2 Saber Way, Haverhill, Massachusetts (certification # ARL0017).



### **Evaluation of Testing Conditions:**

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages  $\leq 65^{\circ}\text{F}$ .

PSI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

PSI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. PSI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

### **Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	None	NA
$\leq 4.0$ pCi/L	See Attachment B	

Notes:

D -Duplicate Sample

The office blank and lab transit blanks had test results of less than the laboratory detection limit of 0.4 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C).

Laboratory results and exposure data for the spike samples are also included in Attachment C. Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (703) 698-9300.



Respectfully Submitted,

**INTERTEK-PSI**

A handwritten signature in black ink that reads "Nand Kaushik". The signature is written in a cursive, flowing style.

Nand Kaushik, P.E.  
Department Manager, Environmental Services  
[Nand.Kaushik@intertek.com](mailto:Nand.Kaushik@intertek.com)

Attachments:           A – Floor Plan with Test Locations  
                              B – Table 1 – Radon Test Summary Spreadsheet  
                              C – Laboratory Analytical Results

# **ATTACHMENT B**

Radon Test Summary Spreadsheet

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Testing period: 11/27/18 - 11/30/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3919552	100A	0.5
3919553	100B	0.5
3919554	100C	<0.4
3919555	100D	<0.4
3919556	100E	<0.4
3916038	104	1.4
3919454	105	0.9
3919455	107	0.6
3919447	110	<0.4
3919446	116	<0.4
3919339	117	0.4
3919338	118	0.4
3919337	119	0.8
3919336	120	1.4
3919335	121	1.7
3919334	204	<0.4
3919333	205	<0.4
3919332	206	<0.4
3919331	207	0.4
3919529	208	0.4
3919528	209	<0.4
3919527	210	<0.4
3919526	211	<0.4
3919521	212	1.1
3919524	213	<0.4
3919525	214	0.4
3918276	215	<0.4
3918277	216	<0.4
3918278	217	<0.4
3918279	218	<0.4
3918280	219	<0.4
3918009	220	<0.4
3918010	221	<0.4
3919517	223	0.4
3919518	223	<0.4
3919516	225	0.5
3919557	228	0.5
3919558	229	<0.4
3919559	231	0.5
3919511	241	<0.4
3916040	307	<0.4
3916039	312	<0.4
3919513	Building Services	<0.4

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Testing period: 11/27/18 - 11/30/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3888458	Cafeteria	0.4
3888459	Cafeteria	0.6
3888467	Gym	0.4
3888457	Gym	0.5
3919512	Gym Office	<0.4
3919444	Health Center	<0.4
3919452	H-11	<0.4
3919453	H-14	<0.4
3919456	H-15	<0.4
3919457	H-16	<0.4
3919458	H-17	<0.4
3919442	H-2	<0.4
3918184	H-7	<0.4
3919450	H-8	<0.4
3919451	H-9	<0.4
3919441	Health room	<0.4
3919514	Kitchen	<0.4
3919551	Main Office	<0.4
3919519	Media Center Office 1	<0.4
3919520	Media Center Office 2	<0.4



<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Testing period: 11/27/18 - 11/30/18</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result (pCi/L)</b>
3919340	117 (D)	<0.4
3919530	207 (D)	<0.4
3918008	219 (D)	<0.4
3919515	225 (D)	<0.4
3919560	231 (D)	<0.4
3919443	H-2 (D)	<0.4
3918020	Field Blank	<0.4
3919580	Field Blank	<0.4
3919430	Office Blank	<0.4
3919423	Transit Blank	<0.4

**Table Notes:**

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank

QC – Quality Control

# **ATTACHMENT C**

Laboratory Analytical Results

NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
Silver Spring MD 20903

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
2400543	3919551	11/27/2018 12:35 pm	11/30/2018 10:00 am	New Hampshire Estates Elementary Flr 1 Main Of	< 0.4
2400544	3919521	11/27/2018 1:38 pm	11/30/2018 10:00 am	New Hampshire Estates Elementary Room 212	0.6
2400545	3919552	11/27/2018 12:36 pm	11/30/2018 10:02 am	New Hampshire Estates Elementary Flr 1 Rm 100	0.5
2400546	3919553	11/27/2018 12:37 pm	11/30/2018 10:02 am	New Hampshire Estates Elementary Flr 1 Rm 100	0.5
2400547	3919554	11/27/2018 12:38 pm	11/30/2018 10:01 am	New Hampshire Estates Elementary Flr 1 Rm 100	< 0.4
2400548	3919555	11/27/2018 12:39 pm	11/30/2018 10:03 am	New Hampshire Estates Elementary Flr 1 Rm 100	< 0.4
2400549	3919556	11/27/2018 12:42 pm	11/30/2018 10:03 am	New Hampshire Estates Elementary Flr 1 Rm 100	< 0.4
2400550	3919557	11/27/2018 12:47 pm	11/30/2018 10:05 am	New Hampshire Estates Elementary Flr 1 Rm 228	0.5
2400551	3919558	11/27/2018 12:48 pm	11/30/2018 10:05 am	New Hampshire Estates Elementary Flr 1 Rm 229	< 0.4
2400552	3919559	11/27/2018 12:49 pm	11/30/2018 10:06 am	New Hampshire Estates Elementary Flr 1 Rm 231	0.5
2400553	3919560	11/27/2018 12:50 pm	11/30/2018 10:06 am	New Hampshire Estates Elementary Flr 1 Rm 231	< 0.4

**Comment:** AMENDED REPORT for 3919521 on 2/5/19 to include the test start and end dates and times and the area tested.

Distributed by: Intertek-PSI (VA)

Date Received: 12/03/2018 Date Logged: 12/03/2018 Date Analyzed: 12/04/2018 Date Reported: 01/29/2019

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
Silver Spring MD 20903


Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
2400554	3919511	11/27/2018 12:53 pm	11/30/2018 10:44 am	New Hampshire Estates Elementary Flr 1 Rm 241	< 0.4
2400555	3919512	11/27/2018 12:59 pm	11/30/2018 10:08 am	New Hampshire Estates Elementary Flr 1 Gym Offi	< 0.4
2400556	3919513	11/27/2018 1:01 pm	11/30/2018 10:08 am	New Hampshire Estates Elementary Flr 1 Bldg. Se	< 0.4
2400557	3919514	11/27/2018 1:05 pm	11/30/2018 10:10 am	New Hampshire Estates Elementary Flr 1 Kitchen	< 0.4
2400558	3919515	11/27/2018 1:10 pm	11/30/2018 10:11 am	New Hampshire Estates Elementary Flr 1 Rm 225	< 0.4
2400559	3919516	11/27/2018 1:10 pm	11/30/2018 10:11 am	New Hampshire Estates Elementary Flr 1 Rm 225	0.5
2400560	3919517	11/27/2018 1:15 pm	11/30/2018 10:12 am	New Hampshire Estates Elementary Flr 1 Rm 223	0.4
2400561	3919518	11/27/2018 1:15 pm	11/30/2018 10:12 am	New Hampshire Estates Elementary Flr 1 Rm 223	< 0.4
2400562	3919519	11/27/2018 1:18 pm	11/30/2018 10:13 am	New Hampshire Estates Elementary Flr 1 Media C	< 0.4
2400563	3919520	11/27/2018 1:19 pm	11/30/2018 10:13 am	New Hampshire Estates Elementary Flr 1 Media C	< 0.4
2400564	3918276	11/27/2018 1:22 pm	11/30/2018 10:14 am	New Hampshire Estates Elementary Flr 1 Rm 215	< 0.4

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Report Approved By: 

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
Silver Spring MD 20903


Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
2400565	3918277	11/27/2018	1:25 pm	11/30/2018	10:15 am	New Hampshire Estates Elementary Flr 1 Rm 216	< 0.4
2400566	3918278	11/27/2018	1:26 pm	11/30/2018	10:16 am	New Hampshire Estates Elementary Flr 1 Rm 217	< 0.4
2400567	3918279	11/27/2018	1:27 pm	11/30/2018	10:17 am	New Hampshire Estates Elementary Flr 1 Rm 218	< 0.4
2400568	3918280	11/27/2018	1:29 pm	11/30/2018	10:18 am	New Hampshire Estates Elementary Flr 1 Rm 219	< 0.4
2400569	3918008	11/27/2018	1:29 pm	11/30/2018	10:18 am	New Hampshire Estates Elementary Flr 1 Rm 219	< 0.4
2400570	3918009	11/27/2018	1:32 pm	11/30/2018	10:20 am	New Hampshire Estates Elementary Flr 1 Rm 220	< 0.4
2400571	3918010	11/27/2018	1:33 pm	11/30/2018	10:20 am	New Hampshire Estates Elementary Flr 1 Rm 221	1.1
2400572	3919524	11/27/2018	1:39 pm	11/30/2018	10:01 am	New Hampshire Estates Elementary Flr 1 Rm 213	< 0.4
2400573	3919525	11/27/2018	1:40 pm	11/30/2018	10:21 am	New Hampshire Estates Elementary Flr 1 Rm 214	0.4
2400574	3919526	11/27/2018	1:42 pm	11/30/2018	10:22 am	New Hampshire Estates Elementary Flr 1 Rm 211	< 0.4
2400575	3919527	11/27/2018	1:44 pm	11/30/2018	10:22 am	New Hampshire Estates Elementary Flr 1 Rm 210	< 0.4

**Comment:** AMENDED REPORT for 3919521 on 2/5/19 to include the test start and end dates and times and the area tested.

Distributed by: Intertek-PSI (VA)

Date Received: 12/03/2018    Date Logged: 12/03/2018    Date Analyzed: 12/04/2018    Date Reported: 01/29/2019

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
Silver Spring MD 20903


Log Number	Device Number	Test Exposure	Duration:	Area Tested	Result pCi/L
2400576	3919528	11/27/2018 1:45 pm	11/30/2018 10:22 am	New Hampshire Estates Elementary Flr 1 Rm 209	< 0.4
2400577	3919529	11/27/2018 1:48 pm	11/30/2018 10:23 am	New Hampshire Estates Elementary Flr 1 Rm 208	0.4
2400578	3919530	11/27/2018 1:49 pm	11/30/2018 10:23 am	New Hampshire Estates Elementary Flr 1 Rm 207	< 0.4
2400579	3919331	11/27/2018 1:49 pm	11/30/2018 10:23 am	New Hampshire Estates Elementary Flr 1 Rm 207	0.4
2400580	3919332	11/27/2018 1:51 pm	11/30/2018 10:17 am	New Hampshire Estates Elementary Flr 1 Rm 206	< 0.4
2400581	3919333	11/27/2018 1:53 pm	11/30/2018 10:16 am	New Hampshire Estates Elementary Flr 1 Rm 205	< 0.4
2400582	3919334	11/27/2018 1:55 pm	11/30/2018 10:16 am	New Hampshire Estates Elementary Flr 1 Rm 204	< 0.4
2400583	3919335	11/27/2018 1:59 pm	11/30/2018 10:27 am	New Hampshire Estates Elementary Lower level R	1.7
2400584	3919336	11/27/2018 2:02 pm	11/30/2018 10:28 am	New Hampshire Estates Elementary Lower level R	1.4
2400585	3919337	11/27/2018 2:04 pm	11/30/2018 10:29 am	New Hampshire Estates Elementary Lower level R	0.8
2400586	3919338	11/27/2018 2:06 pm	11/30/2018 10:29 am	New Hampshire Estates Elementary Lower level R	0.4

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Report Approved By: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
Silver Spring MD 20903


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
2400587	3919339	11/27/2018 2:07 pm 11/30/2018 10:30 am	New Hampshire Estates Elementary Lower level	0.4
2400588	3919340	11/27/2018 2:07 pm 11/30/2018 10:30 am	New Hampshire Estates Elementary Lower level R	< 0.4
2400589	3919446	11/27/2018 2:10 pm 11/30/2018 10:30 am	New Hampshire Estates Elementary Lower level R	< 0.4
2400590	3919447	11/27/2018 2:12 pm 11/30/2018 10:31 am	New Hampshire Estates Elementary Lower level R	< 0.4
2400591	3919454	11/27/2018 2:13 pm 11/30/2018 10:32 am	New Hampshire Estates Elementary Lower level R	0.9
2400592	3919455	11/27/2018 2:15 pm 11/30/2018 10:32 am	New Hampshire Estates Elementary Lower level R	0.6
2400593	3916038	11/27/2018 2:17 pm 11/30/2018 10:33 am	New Hampshire Estates Elementary Lower level R	1.4
2400594	3916039	11/27/2018 2:24 pm 11/30/2018 10:35 am	New Hampshire Estates Elementary Flr 2 Rm 312	< 0.4
2400595	3916040	11/27/2018 2:25 pm 11/30/2018 10:35 am	New Hampshire Estates Elementary Flr 2 Rm 307	< 0.4
2400596	3919441	11/27/2018 2:35 pm 11/30/2018 10:37 am	New Hampshire Estates Elementary Flr 1 Rm HR	< 0.4
2400597	3919442	11/27/2018 2:36 pm 11/30/2018 10:37 am	New Hampshire Estates Elementary Flr 1 Rm H-2	< 0.4

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Date Received: 12/03/2018 Date Logged: 12/03/2018 Date Analyzed: 12/04/2018 Date Reported: 01/29/2019

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Report Approved By: 

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
Silver Spring MD 20903


Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
2400598	3919443	11/27/2018 2:36 pm	11/30/2018 10:37 am	New Hampshire Estates Elementary Flr 1 Rm H-2	< 0.4
2400599	3919444	11/27/2018 2:38 pm	11/30/2018 10:39 am	New Hampshire Estates Elementary Flr 1 Rm H	< 0.4
2400600	3918184	11/27/2018 2:40 pm	11/30/2018 10:40 am	New Hampshire Estates Elementary Flr 1 Rm H-7	< 0.4
2400601	3919450	11/27/2018 2:41 pm	11/30/2018 10:40 am	New Hampshire Estates Elementary Flr 1 Rm H-8	< 0.4
2400602	3919451	11/27/2018 2:43 pm	11/30/2018 10:41 am	New Hampshire Estates Elementary Flr 1 Rm H-9	< 0.4
2400603	3919452	11/27/2018 2:44 pm	11/30/2018 10:41 am	New Hampshire Estates Elementary Flr 1 Rm H-1	< 0.4
2400604	3919453	11/27/2018 2:46 pm	11/30/2018 10:41 am	New Hampshire Estates Elementary Flr 1 Rm H-1	< 0.4
2400605	3919456	11/27/2018 2:47 pm	11/30/2018 10:42 am	New Hampshire Estates Elementary Flr 1 Rm H-1	< 0.4
2400606	3919457	11/27/2018 2:48 pm	11/30/2018 10:42 am	New Hampshire Estates Elementary Flr 1 Rm H-1	< 0.4
2400607	3919458	11/27/2018 2:49 pm	11/30/2018 10:42 am	New Hampshire Estates Elementary Flr 1 Rm H-1	< 0.4
2400608	3918020	11/27/2018 12:35 pm	11/30/2018 10:42 am	New Hampshire Estates Elementary Flr x Rm x Bl	< 0.4

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Report Approved By: 

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
Silver Spring MD 20903


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
2400609	3919580	11/27/2018 12:35 pm 11/30/2018 10:42 am	New Hampshire Estates Elementary Flr x Rm x BI	< 0.4
2400610	3919430	11/27/2018 6:00 am 11/30/2018 10:42 am	New Hampshire Estates Elementary Flr x Rm x BI	< 0.4
2400611	3919423	11/27/2018 6:00 am 11/30/2018 10:42 am	New Hampshire Estates Elementary Flr x Rm x BI	< 0.4

**Comment:** AMENDED REPORT for 3919521 on 2/5/19 to include the test start and end dates and times and the area tested.

Distributed by: Intertek-PSI (VA)

Date Received: 12/03/2018 Date Logged: 12/03/2018 Date Analyzed: 12/04/2018 Date Reported: 01/29/2019

Report Reviewed By: 

Report Approved By: 

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Liquid Scintillation  
NRPP Device Code 8088  
NRSB Device Code 12193

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031


MCPS Radon Survey  
New Hampshire Estates Elementary School  
MD 02903

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
2400612	3888467	11/27/2018 12:55 pm 11/30/2018 10:06 am	Bldg New Hampshire Estates Elementary School	0.4
2400613	3888457	11/27/2018 12:55 pm 11/30/2018 10:07 am	Bldg New Hampshire Estates Elementary School	0.5
2400614	3888458	11/27/2018 1:05 pm 11/30/2018 10:09 am	Bldg New Hampshire Estates Elementary School	0.4
2400615	3888459	11/27/2018 1:05 pm 11/30/2018 10:14 am	Bldg New Hampshire Estates Elementary School	0.6

**Comment:** A copy of this report was emailed to Intertek-PSI (VA).

Distributed by: Intertek-PSI (VA)

Date Received: 12/03/2018 Date Logged: 12/03/2018 Date Analyzed: 12/04/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007  
Ohio RL41

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey  
4514 Taylorsville Road  
Dayton OH 45424

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
3204125	3926831	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	36.1
3204126	3926832	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.8
3204127	3926833	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	33.7
3204128	3926834	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	35.8
3204129	3926835	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	35.0
3204130	3926836	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.5
3204131	3926837	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.6
3204132	3926838	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.3
3204133	3926839	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	33.2
3204134	3926840	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.0

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Unknown

Distributed by: Intertek-PSI (VA)

Date Received: 12/12/2018    Date Logged: 12/12/2018    Date Analyzed: 12/12/2018    Date Reported: 12/13/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

The uncertainty of this radon measurement is +/- 10 %. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

Shawn Price, Director of Laboratory Operations, AccuStar Labs

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Intertek - PSI

Job Number 187732

NOMINAL Conditions: Radon Conc 32.6 pCi/L Rel. Hum 49.1 % Temp. 70.1 F

Date Start: 12/7/18 Date Stop: 12/10/18

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0947 Time Stop: 0947

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (10) Char. Cans-

Device No.'s: \_\_\_\_\_

3926831 thru 3926840

G2 left

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_

Device No.'s: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_

Device No.'s: \_\_\_\_\_

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ R/h Elevation = 820 ft



## Chain of Custody

Project Name: MCPS Radon Survey 2018

Name of Schools:

1. Ashburton ES
2. Carderock Springs ES
3. Diamond ES
4. Fox Chapel ES
5. Baker MS
6. Damascus ES
7. Clemente MS
8. Clopper Mill ES
9. Broad Acres ES
10. Greencastle ES
11. Harmony Hills ES
12. Silver Spring International MS
13. Gaithersburg MS
14. Garrett Park ES
15. New Hampshire Estates ES
16. Georgian Forest ES

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	Date	Initials
Radon Test Kits Deployed	11/27/2018	NL
Radon Test Kits Sampled	11/30/2018	NL
Radon Test Kits Shipped to Lab*	11/30/2018	NL
Radon Test Kits Received by Lab*	12/01/2018; 12/02/2018; 12/03/2018	NL

\*All samples sent to AccuStar Laboratories, 929 Mount Zion Road, Lebanon, PA 17046 and 2 Saber Way, Haverhill, MA 01835



**MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	New Hampshire Estates Elementary School
Date of Report	January 30, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing <b>HVAC Upgrade</b> Window Replacement New Addition New Facility
# of Rooms Tested	47
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	< 0.3 pCi/L
Highest Value	2.7 pCi/L

**Project Status**

Current Project Status at this time: Testing completed; no further action at this time.



January 30, 2018

Mr. Richard Cox, MS  
Team Leader  
Montgomery County Public Schools  
Division of Maintenance  
Rockville, Maryland 20855

Re: Radon Testing Services

KCI Job #1214694182

**Location: New Hampshire Estates Elementary School**

8720 Carroll Ave.  
Silver Spring , Maryland 20903

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a “short-term” 3-day radon test for the New Hampshire Estates Elementary School, located at 8720 Carroll Ave. in Silver Spring , Maryland 20903 (subject site).

**SCOPE OF SERVICES**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on November 27, 2017 and deployed fifty-seven (57) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Appendix A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to



Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on November 30, 2017 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

### **EVALUATION OF TESTING CONDITIONS**

These tests represent:

- HVAC upgrade testing.

These tests were conducted to:

- Evaluate radon concentrations following the installation of a new HVAC system.

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 30s and high temperatures ranged from the low-50s to mid-60s. Maximum sustained winds ranged from 8-15 miles per hour. Average humidity was around 65%. 0.02 Inches of precipitation was recorded during the testing period.

A magnitude 4.1 earthquake was reported on Thursday, November 30 near Dover, Delaware approximately 95 miles east of Gaithersburg, Maryland. The earthquake occurred during or just after the radon testing period for this facility. In general, enhanced radon emissions have been observed prior to earthquakes and this has been recorded all over the world, according to the research article entitled *Radon-222: A Potential Short-Term Earthquake Precursor*, published June 30, 2015 in the Journal of Earth Science and Climate

Change. The nearby earthquake, which occurred during or prior to the testing period, may have resulted in higher-than-normal radon test results for this facility.

**RESULTS**

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Missing/compromised tests, missed rooms, and locked rooms are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	None	N/A
$\leq 4.0$ pCi/L	See Attachment B	See Attachment B

<b>Quality Control Samples</b>	
Results of Blank Canisters:	The field blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at 410-316-7800.

Sincerely,



James Mouldsdale, CHMM  
Radon Measurement Specialist  
KCI Technologies, Inc.

Attachments:

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Test Period: 11/27/17-11/30/17</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7976022	100	< 0.3
7976036	101	2.2
7976032	104	2.2
7976031	105	1.8
7976002	107	1.9
7976001	110	1.4
7976037	116	0.8
7976038	117	1.0
7976041	118	1.1
7976039	119	0.9
7976044	120	1.5
7976042	121	2.7
7976054	204	0.6
7976057	208	0.7
7976052	215	0.7
7976051	216	0.7
7976050	217	< 0.3
7976047	218	0.5
7976046	219	0.8
7976045	220	< 0.3
7976043	221	1.2
7976062	228	0.6
7976049	229	0.8
7976063	230	1.0
7976008	238	0.6
7976011	238	0.8
7976009	241	< 0.3
7976064	304	0.6
7976069	316	1.0
7976040	100A	0.9
7976027	100B	0.6
7976035	100C	0.6
7976005	100D	< 0.3
7976006	100E	< 0.3
7976007	* 240 (Tampered)	0.7
7976058	APR	0.8
7976068	* APR (Tampered)	0.8
7976012	BUILDING SERVICE	< 0.3
7976023	H	< 0.3
7976028	H11	< 0.3
7976025	H14	< 0.3
7976026	H15	< 0.3
7976021	H16	0.5
7976034	H17	0.5
7976018	H2	0.6
7976020	H7	0.6

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Test Period: 11/27/17-11/30/17</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7976024	H8	< 0.3
7976029	H9	0.6
7976030	HEALTH CENTER	< 0.3

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Test Period: 11/27/17-11/30/17</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7976015	D (105)	1.8
7976055	D (204)	0.6
7976053	D (217)	0.7
7976056	D (221)	1.4
7976059	D (316)	1.0
7976033	FB (100)	< 0.3
7976013	FB (208)	< 0.3
7978493	OB (OB)	< 0.3

Table Note:

\* Missing or Compromised Sample





# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:

**NEW HAMPSHIRE ESTATES ES****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7976022	100	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	< 0.3	2017-12-05
7976033	100	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	< 0.3	2017-12-05
7976040	100A	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	0.9 ± 0.4	2017-12-05
7976027	100B	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	0.6 ± 0.3	2017-12-04
7976035	100C	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	0.6 ± 0.4	2017-12-05
7976006	100E	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	< 0.3	2017-12-04
7976005	100D	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	< 0.3	2017-12-05
7976036	101	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	2.2 ± 0.4	2017-12-04
7976032	104	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	2.2 ± 0.5	2017-12-05
7976031	105	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	1.8 ± 0.3	2017-12-04
7976015	105	2017-11-27 @ 12:00 pm	2017-11-30 @ 9:00 am	1.8 ± 0.4	2017-12-05
7976002	107	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	1.9 ± 0.4	2017-12-04
7976001	110	2017-11-27 @ 9:00 am	2017-11-30 @ 9:00 am	1.4 ± 0.4	2017-12-05
7976037	116	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	0.8 ± 0.3	2017-12-05
7976038	117	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	1.0 ± 0.3	2017-12-05
7976041	118	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	1.1 ± 0.3	2017-12-04
7976039	119	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	0.9 ± 0.3	2017-12-04
7976044	120	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	1.5 ± 0.4	2017-12-05
7976042	121	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	2.7 ± 0.4	2017-12-04
7976054	204	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.6 ± 0.3	2017-12-04
7976055	204	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.6 ± 0.3	2017-12-04
7976013	208	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	< 0.3	2017-12-05
7976057	208	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.7 ± 0.4	2017-12-05
7976052	215	2017-11-27 @ 10:00 am	2017-11-30 @ 10:00 am	0.7 ± 0.3	2017-12-04
7976051	216	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	0.7 ± 0.3	2017-12-05
7976050	217	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	< 0.3	2017-12-04
7976053	217	2017-11-27 @ 12:00 pm	2017-11-30 @ 9:00 am	0.7 ± 0.4	2017-12-05
7976047	218	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	0.5 ± 0.3	2017-12-04
7976046	219	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	0.8 ± 0.4	2017-12-05
7976045	220	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	< 0.3	2017-12-05
7976056	221	2017-11-27 @ 12:00 pm	2017-11-30 @ 9:00 am	1.4 ± 0.3	2017-12-04
7976043	221	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	1.2 ± 0.4	2017-12-05
7976062	228	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.6 ± 0.3	2017-12-04
7976049	229	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.8 ± 0.4	2017-12-05
7976063	230	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	1.0 ± 0.4	2017-12-05
7976008	238	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	0.6 ± 0.4	2017-12-05
7976011	238	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	0.8 ± 0.4	2017-12-05

Radon test result report for:

**NEW HAMPSHIRE ESTATES ES****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7976007	240	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	0.7 ± 0.3	2017-12-04
7976009	241	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	< 0.3	2017-12-05
7976064	304	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.6 ± 0.3	2017-12-04
7976069	316	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	1.0 ± 0.3	2017-12-04
7976059	316	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	1.0 ± 0.3	2017-12-04
7976068	APR	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.8 ± 0.3	2017-12-04
7976058	APR	2017-11-27 @ 12:00 pm	2017-11-30 @ 10:00 am	0.8 ± 0.3	2017-12-04
7976012	BUILDING SERVICE	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	< 0.3	2017-12-05
7976023	H	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	< 0.3	2017-12-04
7976028	H11	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	< 0.3	2017-12-05
7976025	H14	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	< 0.3	2017-12-04
7976026	H15	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	< 0.3	2017-12-05
7976021	H16	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	0.5 ± 0.4	2017-12-05
7976034	H17	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	0.5 ± 0.3	2017-12-04
7976018	H2	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	0.6 ± 0.3	2017-12-04
7976020	H7	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	0.6 ± 0.3	2017-12-04
7976024	H8	2017-11-27 @ 11:00 am	2017-11-30 @ 10:00 am	< 0.3	2017-12-04
7976029	H9	2017-11-27 @ 11:00 am	2017-11-30 @ 9:00 am	0.6 ± 0.3	2017-12-04
7976030	HEALTH CENTER	2017-11-27 @ 10:00 am	2017-11-30 @ 9:00 am	< 0.3	2017-12-05
7978493	OB	2017-11-27 @ 1:00 pm	2017-11-30 @ 1:00 pm	< 0.3	2017-12-04



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

- |  |                                       |
|--|---------------------------------------|
| 1. Montgomery Knolls Elementary School       | 14. Flora Singer Elementary School    |
| 2. New Hampshire Estates Elementary School   | 15. Sligo Middle School               |
| 3. Montgomery Blair High School              | 16. Mario Loiederman Middle School    |
| 4. Silver Creek Middle School                | 17. Roscoe Nix Elementary School      |
| 5. Sligo Creek Elementary School             | 18. Sargent Shriver Elementary School |
| 6. East Silver Spring Elementary School      | 19.                                   |
| 7. Silver Spring International Middle School | 20.                                   |
| 8. Woodlin Elementary School                 | 21.                                   |
| 9. Northwood High School                     | 22.                                   |
| 10. Spring Mill Center                       | 23.                                   |
| 11. Westbrook Elementary School              | 24.                                   |
| 12. Westland Middle School                   | 25.                                   |
| 13. Cloverly Elementary School               | 26.                                   |

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	Date	Initials
Radon Test Kits Deployed	11/27/17	JM
Radon Test Kits Collected	11/30/17	JM
Radon Test Kits Shipped to Lab*	11/30/17	JM
Radon Test Kits Received by Lab*	12/04/17	JM

\*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759

Radon test result report for:**TRANSIT 1****NONE**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7978062	TRANSIT 1	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975804	TRANSIT 10	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7977990	TRANSIT 11	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978201	TRANSIT 12	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978203	TRANSIT 13	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978206	TRANSIT 14	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978246	TRANSIT 15	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978239	TRANSIT 16	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978226	TRANSIT 17	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7975078	TRANSIT 18	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7975077	TRANSIT 19	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978074	TRANSIT 2	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975076	TRANSIT 20	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975684	TRANSIT 21	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975683	TRANSIT 22	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975601	TRANSIT 23	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978011	TRANSIT 24	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978012	TRANSIT 25	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978094	TRANSIT 26	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7975624	TRANSIT 27	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7834562	TRANSIT 28	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7977995	TRANSIT 29	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978098	TRANSIT 3	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7977992	TRANSIT 30	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978719	TRANSIT 4	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978732	TRANSIT 5	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978731	TRANSIT 6	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975806	TRANSIT 7	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975815	TRANSIT 8	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975805	TRANSIT 9	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04

---

December 19, 2017

**\*\* LABORATORY ANALYSIS REPORT \*\***

---

Radon test result report for:

**MCPS - Spike Sample Laboratory Results. Measured values are satisfactory, i.e. within  $\pm 25\%$  of the chamber's reference value (27.7 pCi/L).**

---

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7975075	S1	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	25.6 $\pm$ 0.7	2017-12-07
7975064	S2	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	27.4 $\pm$ 0.8	2017-12-07
7975063	S3	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	26.3 $\pm$ 0.7	2017-12-07
7975065	S4	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	23.0 $\pm$ 0.7	2017-12-07
7975069	S5	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	25.6 $\pm$ 0.7	2017-12-07
7975070	S6	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	23.0 $\pm$ 0.7	2017-12-07

---

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 182393

NOMINAL Conditions: Radon Conc 27.7 pCi/L Rel. Hum 49.1 % Temp. 70.1 F

Date Start: 12/1/17 Date Stop: 12/4/17 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 1049 Time Stop: 1049 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (6) Char. Bags. Device No.'s: \_\_\_\_\_

7975075, 7975064, 7975063, \_\_\_\_\_

7975065, 7975069, 7975070 \_\_\_\_\_

F4 Right

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ R/h Elevation = 820 ft



**RADON SCREENING SURVEY – FOLLOW-UP NEW HAMPSHIRE ESTATES  
ELEMENTARY SCHOOL**

8720 Carroll Avenue, Silver Spring, Maryland 20903

**EXECUTIVE SUMMARY**

Date of Test Report:	4/15/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	1
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	<0.4
High Value:	<0.4
Confirmed Rooms $\geq$ 4.0 pCi/L US EPA Action Level	0

**Summary of Sampling Events  $\geq$  4.0 pCi/L**

Room	Result (pCi/L) 2/18/16 Initial	Result (pCi/L) 4/15/16 Follow-Up	Average Result (pCi/L)
H11	---Missing	<0.4	<0.4



### MCPS RADON TESTING

Executive Summary: New Hampshire Estates Elementary School

Date of Test Report:	4/15/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	1
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	< 0.4

Project Status:

Retesting completed; no further action at this time.



April 15, 2016

Mr. Richard Cox  
Indoor Air Quality Team Leader  
Montgomery County Public Schools  
850 Hungerford Drive  
Rockville, MD 20850

Re: **Radon Testing Services**  
KCI Job # 12146341.31

Location: New Hampshire Estates Elementary School  
8720 Carroll Avenue  
Silver Spring, MD 20903

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the New Hampshire Estates Elementary School, located at 8720 Carroll Avenue in Silver Spring, Maryland 20903 (subject site).

**Scope of Services:**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on March 8, 2016 and deployed one (1) activated charcoal (AC) radon test kit. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on March 11, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to AccuStar Labs for analysis by gamma-ray spectroscopy. Accustar Labs is a NRSB certified analytical laboratory for radon analysis (certification # ARL0007) located at 929 Mount

Zion Road, Lebanon, Pennsylvania.

**Evaluation of Testing Conditions:**

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages  $\leq 65^{\circ}$  F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

**Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	none	n/a
$< 4.0$ pCi/L	See Attachment B	

Notes:  
D- Duplicate sample

The office blank and lab transit blanks had test results of less than the laboratory detection limit of 0.4 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,



James M. Mouldale  
Radon Measurement Specialist  
KCI Technologies, Inc.

Attachments:      A- Floor Plan with Test Locations  
                          B- Table 1-Radon Test Summary Spreadsheet  
                          C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank\*

PM- Project Manager

QC- Quality Control

\*Office blanks were submitted at a rate of 1% for all samples deployed in Phase 11 testing. Office blanks were not submitted under each school individually.



<b>Radon Testing Results</b>		
<b>New Hampshire Estates ES</b>		
<b>Test Period: 03/08/16-03/11/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
3029113	H11	<0.4

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

NRPP 10511AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 12146341

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152

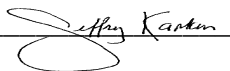
New Hampshire Estates ES  
8720 Carroll Ave  
Silver Spring MD 20903

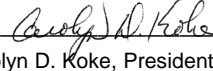
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3016768	3029113	03/08/2016 6:33 am 03/11/2016 8:15 am	Unit H11 Health Rm/Lab Second Floor	<0.4

**Comment:** A copy of this report was emailed to tehsin@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 03/15/2016 Date Logged: 03/15/2016 Date Analyzed: 03/16/2016 Date Reported: 03/16/2016

Report Reviewed By: 

Report Approved By:   
Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

The uncertainty of this radon measurement is +/- 10 %. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

**Send Written Report To:**

Name: KGI Technologies, Inc  
 Address: 936 Ridgebrook Road  
 Address:  
 City / Town: Sparks  
 State/Province Postal Code: MD 21152  
 Report Country: Baltimore County  
 Email Address: tehsin@kci.com

**Site Tested:**

Site Name: New Hampshire Estates ES  
 Address: 6720 Carroll Ave  
 Address:  
 City / Town: Silver Spring  
 State/Province Postal Code: MD 20903  
 Test Country: Montgomery County  
 Project Number: 12146341

**Contact Information:**

Contact: Tehsin Aurangabadwala  
 Telephone: 410-891-1726  
 Technician:  
 Cert. Number:  
 Signature:

Lab Use Only	Device Number	Building Number	Unit Number	Floor	Name of Room	Start Date mm/dd/yyyy	Start Time hh:mm am / pm	Stop Date mm/dd/yyyy	Stop Time hh:mm am / pm	Lab Use Only
	3029113		H11	2	Health Room / Lab	03/08/2016	06:33 am	03/11/2016	08:15	

NRPP 10511AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 12146341

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152

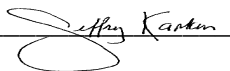
MCPS Radon Phase 11 Office Blank

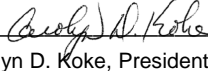
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3016739	3029191	03/08/2016 10:00 am 03/11/2016 10:00 am	Office Blank	<0.4

**Comment:** A copy of this report was emailed to tehsin@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 03/15/2016 Date Logged: 03/15/2016 Date Analyzed: 03/15/2016 Date Reported: 03/16/2016

Report Reviewed By: 

Report Approved By:   
Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

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**Radon Device Type Open Face Canister**

**Send Written Report To:**

Name: KCI Technologies, Inc  
 Address: 936 Ridgebrook Road  
 Address:   
 City / Town: Sparks  
 State/Province Postal Code: MD 21152  
 Report Country: Baltimore County  
 Email Address: tehsin@kci.com

**Site Tested:**

Site Name: *MCP's Office Blank*  
 Address: *936 Ridgebrook Rd*  
 Address:   
 City / Town: *Sparks*  
 State/Province Postal Code: MD 21152  
 Test Country: Montgomery County  
 Project Number: 12146341

**Contact Information:**

Contact: Tehsin Aurangabadwala  
 Telephone: 410-891-1726  
 Technician:   
 Cert. Number:   
 Signature: *Tehsin Aurangabadwala*

Lab Use Only	Device Number	Building Number	Unit Number	Floor	Name of Room	Start Date mm/dd/yyyy	Start Time hh:mm am / pm	Stop Date mm/dd/yyyy	Stop Time hh:mm am / pm	Lab Use Only
	3029191	1	1	1	Office Blank	03/08/2016	10:00 am	03/11/2016	10:00 am	

NRPP 10511AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152

MCPS  
Transit Blanks

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3010588	3028953	01/19/2016 1:00 pm	01/22/2016 9:30 am	1	< 0.4
3010589	3028955	01/19/2016 1:00 pm	01/22/2016 9:30 am	2	< 0.4
3010590	3028954	01/19/2016 1:00 pm	01/22/2016 9:30 am	3	< 0.4
3010591	3028997	01/19/2016 1:00 pm	01/22/2016 9:30 am	4	< 0.4

**Comment:** AMENDED REPORT for 3028953-8955, 3028997 on 2/22/16 to add all missing information from the blank datasheet. A copy of this report was emailed to james.mouldale@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 01/27/2016    Date Logged: 01/27/2016    Date Analyzed: 01/28/2016    Date Reported: 01/28/2016

Report Reviewed By: Christie Bates

Report Approved By: Carolyn D. Koke

Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

The uncertainty of this radon measurement is +/- 10 %. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

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Return canisters for analysis to:  
**AccuStar Labs**  
 929 Mt. Zion Rd., Lebanon, PA 17046  
 800-523-4964

AccuStar Labs – Lebanon, PA  
**INFORMATION FORM - Large Buildings -**  
 Projects - Apartments

Instructions on back of form  
 Read instructions carefully  
 Discrepancies will invalidate tests

**Test Site Info**

Name of Building/Project or Owner: Transit  
 Site Address: Transit  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ County: \_\_\_\_\_  
 Projects Contact Name: Don Coale Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Do not use this form in  
 New Jersey or Florida  
 Call for correct forms.

Multi-Page Report Y-N

LAB USE ONLY	
Wgt. Gain	pCi/L
	LOF
	LOF
	LOF
	LOF

Detector Serial#	ROOM NAME & NUMBER - LOCATION OF DETECTOR IN ROOM (indicate duplicates and blanks)	Floor	Start Date	Start Time Include AM/PM	Stop Date	Stop Time Include AM/PM
3028953	Transit	1	1/19/16	approx: 00pm 1/23/16		9:30am
8955	Transit	1	1/19/16			
8954	Transit	1	1/19/16			
8997	Transit	1	1/19/16			

1/27/2016

KCI Technologies, Inc.

3010588 3028953 ACPC275B EXP12/31/2018

**Structure Type:** (circle one or more) Basement - Crawlspace - Slab on Grade - Other  
**Test Purpose:** (Circle all that apply) Initial Screening - Follow Up Test - Post Mitigation - Real Estate - Other  
**Building Type:** (Circle One) Residential - Non Residential Private Day Care - Private School Day Care in Public School - Public School

Both Placed by and Retrieved by signatures are required  
 Canisters placed by \_\_\_\_\_ # \_\_\_\_\_  
 Canisters retrieved by \_\_\_\_\_ # \_\_\_\_\_

Send Results To:  
 Company Name: KCI Tech  
 Address: 936 Ridgebrook  
 City: Sparks State: MD Zip: 21152  
 Phone: 410-599-3826  
 EMAIL Results to: James.Mouldale@kci.com

Were general operating conditions maintained?	Yes - No	explain if NO
Were closed building conditions maintained?	Yes - No	explain if NO
Normal Temp.	Yes - No	
Normal Humidity	Yes - No	
Windy Y-N	Rainy Y-N	

Make sure information is complete and correct.  
 If a recalculation is requested there is a \$10.00 recalc fee PER Canister.

Mailing: PO Box 990 Jonestown, PA 17038  
 Shipping: 929 Mt Zion Road, Lebanon, PA 17046  
 800-523-4964 fax 717-274-5662  
 NEHA 10511AL NRSB ARL 0007



# TCS INDUSTRIES, INC.

(717) 657-7032

RADON GAS DETECTION

www.radondetek.com

4326 Crestview Road, Harrisburg, PA 17112

James Mouldale  
KCI  
936 Ridgebrook Rd.  
Sparks, MD 21152

April 04, 2016

Dear Mr. Mouldale:

The spike exposure data were:

Start 04/04/16 @ 1110 hrs EDT  
End 04/06/16 @ 1113 hrs EDT

AC 3029218, 3029219, 3029220, 3029217, 3029214, 3029217, and 3029166

Average radon concentration was 10.6 pCi/L +/- 5%

Avg. Temp. was 71F  
Avg. RH was 51%  
Elevation was 490 feet above sea level

Sincerely,



Carl H. Distenfeld, CHP

\*\*\*\*\*  
TCS Radon Chamber NRSB CHM 0002  
\*\*\*\*\*

NRPP 10511AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152

MCPS  
Radon Spike Sample Laboratory Results


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3020102	3029166	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.9
3020103	3029214	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.5
3020104	3029217	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	10.7
3020105	3029218	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.3
3020106	3029219	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.0
3020107	3029220	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	10.5

**Comment:** A copy of this report was emailed to james.mouldsdale@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 04/07/2016 Date Logged: 04/07/2016 Date Analyzed: 04/07/2016 Date Reported: 04/08/2016

**Note:** Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.

Report Reviewed By: 

Report Approved By:   
Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

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**Send Written Report To:**

Name: KCI Technologies, Inc  
 Address: 936 Ridgebrook Road  
 Address:  
 City / Town: Sparks  
 State/Province Postal Code: MD 21152  
 Report Country: Baltimore County  
 Email Address: tehsin@kci.com

**Site Tested:**

Site Name: MCRS  
 Address: 850 Hagerford Dr  
 Address:  
 City / Town: Rockville  
 State/Province Postal Code: MD 20850  
 Test Country: Montgomery County  
 Project Number: 12146341

**Contact Information:**

Contact: Tehsin Aurangabadwala  
 Telephone: 410-891-1726  
 Technician:  
 Cert. Number:  
 Signature:

Lab Use Only	Device Number	Building Number	Unit Number	Floor	Name of Room	Temp	Start Date mm/dd/yyyy	Start Time hh:mm am / pm	Stop Date mm/dd/yyyy	Stop Time hh:mm am / pm	Lab Use Only
	3029166	1		1	1		4/4/16	11:10am	4/6/16	11:15am	
	3029214	1		1	2						
	3029217	1		1	3						
	3029218	1		1	4						
	3029219	1		1	5						
	3029220	1		1	6						



### MCPS RADON TESTING

Executive Summary: New Hampshire Estates Elementary School

Date of Test Report:	2/18/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	47
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.9

Project Status:

Initial testing completed; missing or compromised samples need re-test.



February 18, 2016

Mr. Richard Cox  
Indoor Air Quality Team Leader  
Montgomery County Public Schools  
850 Hungerford Drive  
Rockville, MD 20850

Re: **Radon Testing Services**  
KCI Job # 12146341.25

Location: New Hampshire Estates Elementary School  
8720 Carroll Avenue  
Silver Spring, MD 20903

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the New Hampshire Estates Elementary School, located at 8720 Carroll Avenue in Silver Spring, Maryland 20903 (subject site).

**Scope of Services:**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on January 19, 2016 and deployed fifty-seven (57) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on January 22, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

**Evaluation of Testing Conditions:**

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages  $\leq 65^{\circ}$  F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

**Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	none	n/a
$< 4.0$ pCi/L	See Attachment B	

Notes:  
D- Duplicate sample

The field blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,



James M. Mouldale  
Radon Measurement Specialist  
KCI Technologies, Inc.

Attachments:      A- Floor Plan with Test Locations  
                          B- Table 1-Radon Test Summary Spreadsheet  
                          C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations



# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Test Period: 01/19/16-01/22/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7721483	100	< 0.3
7721453	101	1.2
7721457	104	1.4
7721490	105	1.1
7721500	107	1.1
7721459	110	1.2
7721461	116	0.6
7721460	117	< 0.3
7721469	118	0.8
7721467	119	0.9
7721492	120	1
7721471	121	1.6
7721475	204	< 0.3
7721465	208	< 0.3
7721488	215	< 0.3
7721494	216	< 0.3
7721468	217	0.8
7721495	218	< 0.3
7721464	219	0.8
7721463	220	1.1
7721499	221	1.6
7721447	228	1
7721451	229	1.1
7721449	230	0.8
7721448	231	1.2
7721466	238	< 0.3
7721470	238	< 0.3
7721462	241	0.6
7721452	304	0.8
7721455	316	0.6
7721445	791	1
7721478	100 A	0.8
7721476	100 B	0.7
7721485	100 C	0.8
7721482	100 D	0.8
7721486	100 E	0.7
7721442	APR	0.7
7721446	APR	0.9
7721458	BS	0.8
7721472	H	< 0.3
7721477	* H 11 (missing)	0
7721493	H 14	< 0.3
7721474	H 15	< 0.3
7721491	H 16	< 0.3
7721473	H 17	< 0.3
7721479	H 2	< 0.3

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Test Period: 01/19/16-01/22/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7721489	H 7	< 0.3
7721484	H 8	< 0.3
7721487	HR	< 0.3

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>New Hampshire Estates Elementary School</b>		
<b>Test Period: 01/19/16-01/22/16</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7721481	D (100)	0.7
7721498	D (105)	1.9
7721496	D (208)	1.1
7721450	D (APR)	1
7721497	D (H 15)	< 0.3
7721480	FB (100)	< 0.3
7721456	FB (104)	< 0.3
7721444	OB (0)	< 0.3

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

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February 11, 2016 **LABORATORY ANALYSIS REPORT** \*\*

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Radon test result report for:  
**NEW HAMPSHIRE ESTATES ELEMENTARY SC  
LOWER FL**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7721453	101	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.2 ± 0.4	2016-01-27
7721456	104	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721457	104	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.4 ± 0.4	2016-01-27
7721490	105	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.1 ± 0.4	2016-01-27
7721498	105	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.9 ± 0.4	2016-01-27
7721500	107	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.1 ± 0.4	2016-01-27
7721459	110	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.2 ± 0.4	2016-01-27
7721461	116	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	0.6 ± 0.3	2016-01-27
7721460	117	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721469	118	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	0.8 ± 0.3	2016-01-27
7721467	119	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	0.9 ± 0.3	2016-01-27
7721492	120	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.0 ± 0.4	2016-01-27
7721471	121	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.6 ± 0.4	2016-01-27

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February 11, 2016 **LABORATORY ANALYSIS REPORT** \*\*

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Radon test result report for:  
**NEW HAMPSHIRE ESTATES ELEMENTARY SC  
MAIN FL**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7721444	0	2016-01-19 @ 3:00 pm	2016-01-22 @ 11:00 am	< 0.3	2016-01-27
7721447	228	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	1.0 ± 0.4	2016-01-27
7721451	229	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	1.1 ± 0.4	2016-01-27
7721449	230	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	0.8 ± 0.4	2016-01-27
7721448	231	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	1.2 ± 0.4	2016-01-27
7721466	238	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721470	238	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721462	241	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	0.6 ± 0.3	2016-01-27
7721445	791	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	1.0 ± 0.3	2016-01-27
7721442	APR	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	0.7 ± 0.3	2016-01-27
7721446	APR	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	0.9 ± 0.3	2016-01-27
7721450	APR	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	1.0 ± 0.3	2016-01-27
7721458	BS	2016-01-19 @ 11:00 am	2016-01-22 @ 7:00 am	0.8 ± 0.3	2016-01-27

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February 11, 2016  
**LABORATORY ANALYSIS REPORT**

Radon test result report for:  
**NEW HAMPSHIRE ESTATES ELEMENTARY SC  
MAIN FLOOR**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7721480	100	2016-01-19 @ 9:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721481	100	2016-01-19 @ 9:00 am	2016-01-22 @ 7:00 am	0.7 ± 0.3	2016-01-27
7721483	100	2016-01-19 @ 9:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721478	100 A	2016-01-19 @ 9:00 am	2016-01-22 @ 7:00 am	0.8 ± 0.4	2016-01-27
7721476	100 B	2016-01-19 @ 9:00 am	2016-01-22 @ 7:00 am	0.7 ± 0.3	2016-01-27
7721485	100 C	2016-01-19 @ 9:00 am	2016-01-22 @ 7:00 am	0.8 ± 0.4	2016-01-27
7721482	100 D	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	0.8 ± 0.4	2016-01-27
7721486	100 E	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	0.7 ± 0.4	2016-01-27
7721475	204	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721496	208	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.1 ± 0.4	2016-01-27
7721465	208	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721488	215	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721494	216	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721468	217	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	0.8 ± 0.3	2016-01-27
7721495	218	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721464	219	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	0.8 ± 0.3	2016-01-27
7721463	220	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.1 ± 0.4	2016-01-27
7721499	221	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	1.6 ± 0.4	2016-01-27
7721472	H	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721477	H 11	@	@		
7721493	H 14	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721497	H 15	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721474	H 15	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721491	H 16	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721473	H 17	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721479	H 2	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	< 0.3	2016-01-27
7721489	H 7	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721484	H 8	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27
7721487	HR	2016-01-19 @ 10:00 am	2016-01-22 @ 7:00 am	< 0.3	2016-01-27

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February 11, 2016 **\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**NEW HAMPSHIRE ESTATES ELEMENTARY SC  
UPPER LEVEL**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7721452	304	2016-01-19 @ 10:00 am	2016-01-22 @ 8:00 am	0.8 ± 0.4	2016-01-27
7721455	316	2016-01-19 @ 11:00 am	2016-01-22 @ 8:00 am	0.6 ± 0.3	2016-01-27

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Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

February 2, 2016  
**\*\*LABORATORY ANALYSIS REPORT\*\***

Radon test result report for:  
**MCPS PHASE 5 & 6  
TRANSIT BLANKS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7722194	1	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718494	10	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718475	11	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718495	12	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718496	13	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718497	14	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718498	15	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718499	16	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718500	17	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718296	18	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718295	19	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722195	2	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716789	20	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716785	21	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7716791	22	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716786	23	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716793	24	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718274	25	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716792	26	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718294	27	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718293	28	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718292	29	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722197	3	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718290	30	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722198	4	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722199	5	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722211	6	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718491	7	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718476	8	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7718479	9	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27

February  
15,  
2016

**LABORATORY ANALYSIS  
REPORT \*\***

Spike Sample Laboratory Results

Radon test result report for:  
**MCPS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7718273	101A	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.5 ± 0.6	2016-02-04
7718281	102B	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.4 ± 0.6	2016-02-04
7718282	103C	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.3 ± 0.6	2016-02-04
7718288	104D	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.7 ± 0.6	2016-02-04
7718289	105E	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.6 ± 0.6	2016-02-04
7718291	106F	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.5 ± 0.6	2016-02-04

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCF Technologies Inc. Job Number 173704

NOMINAL Conditions: Radon Conc 5.9 pCi/L Rel. Hum 45.9 % Temp. 79.0 F

Date Start: 11/30/16 Date Stop: 2/1/16 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0926 Time Stop: 0926 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (6) Char. Bags - Device No.'s: \_\_\_\_\_

7718281, 7718282, 7718291, \_\_\_\_\_

7718288, 7718289, 7718273 \_\_\_\_\_

ε3 Left

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ R/h Elevation = 820 ft



### Chain of Custody

Project Name: MCPS Radon Phase VI

Name of Schools:

- |                          |                              |                           |
|--------------------------|------------------------------|---------------------------|
| 1. Francis Scott Key MS  | 12. Little Bennett ES        | 23. Rolling Terrace ES    |
| 2. Gaithersburg ES       | 13. Loiderman MS             | 24. Roscoe Nix ES         |
| 3. Gaithersburg MS       | 14. Longview ES              | 25. Sally K. Ride ES      |
| 4. Galway ES             | 15. Meadow Hall ES           | 26. Spark Matsunaga ES    |
| 5. Great Seneca Creek ES | 16. Neelsville MS            | 27. Tacoma Park ES        |
| 6. Harmony Hills ES      | 17. New Hampshire Estates ES | 28. Thomas Pyle MS        |
| 7. John Poole MS         | 18. North Bethesda MS        | 29. Wayside ES            |
| 8. Judith A. Resnik ES   | 19. Northwest HS             | 30. Westbrook ES (retest) |
| 9. Kemp Mill ES          | 20. Pine Crest ES            | 31. Westland MS (retest)  |
| 10. Kingsview MS         | 21. Radnor Center            | 32. William B. Gibbs ES   |
| 11. Lakelands Park MS    | 22. Ritchie Park ES          | 33. William Tyler Page ES |

	Date	Initials
Radon Test Kits Deployed	1/19/16	JM
Radon Test Kits Sampled	1/22/16	JM
Radon Test Kits Shipped to Lab*	1/22/16	JM
Radon Test Kits Received by Lab*	1/26/16	JM

\*All samples sent to Air Check, Inc., 1936 Butler Bridge Road, Mills River, NC 28758